PAYLOAD FAIRING
This mission will utilize the standard PLF-BR-15255 commercial payload fairing which is 4.1 meters in diameter and 15.255 meters in length. The PLF encapsulates the satellite along with the Breeze-M upper stage to provide protection from the dense atmosphere for the first 5 minutes and 47 seconds after launch.

BREEZE M UPPER STAGE
The Breeze M is powered by one pump-fed gimbaled main engine that develops thrust of 20 kN (4,500 lbf). It is composed of a central core and an auxiliary propellant tank which is jettisoned in flight following depletion. The Breeze M control system includes an on-board computer, a three-axis gyro stabilized platform, and a navigation system. The quantity of propellant carried is dependent on specific mission requirements and is varied to maximize mission performance.

BOOSTER
The Proton booster consists of three stages (described below). The overall height of the three stages of Proton is 42.3 meters (138.8 ft).

Third Stage
Powered by one RD-0213 engine, this stage develops thrust of 583 kN (131,000 lbf), and a four-nozzle vernier engine that produces thrust of 31 kN (7,000 lbf). Guidance, navigation, and control of the Proton M during operation of the first three stages is carried out by a triple redundant closed-loop digital avionics system mounted in the Proton’s third stage.

Second Stage
Of conventional cylindrical design, this stage is powered by three RD-0210 engines plus one RD-0211 engine and develops a vacuum thrust of 2.4 MN (540,000 lbf).

First Stage
The first stage consists of a central tank containing the oxidizer surrounded by six outboard fuel tanks. Each fuel tank also carries one of the six RD-276 engines that provide first stage power. Total first stage vacuum-rated level thrust is 11.0 MN (2,500,000 lbf).

The Proton and the Breeze M are built by Khrunichev State Research and Production Space Center.

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Mission Description

The Proton M/Breeze M launch vehicle, utilizing a 5-burn Breeze M Supersynchronous Transfer Orbit mission design, will lift off from Pad 39 at Baikonur Cosmodrome, Kazakhstan, with the EUTELSAT 5 West B/MEV-1 satellites on board. The first three stages of the Proton will use a standard ascent profile to place the orbital unit (Breeze M upper stage and the EUTELSAT 5 West B/MEV-1 satellites) into a sub-orbital trajectory. From this point in the mission, the Breeze M will perform planned maneuvers to inject the orbital unit first to a circular parking orbit, then to an intermediate orbit, followed by a transfer orbit, and finally to a supersynchronous transfer orbit. Separation of the EUTELSAT 5 West B and MEV-1 satellites is scheduled to occur approximately 15 hours, 36 minutes and 15 hours, 54 minutes after liftoff, respectively.

Satellite Stack

The Ascent Unit with the Integrated Payload Stack (IPS) is shown below. The IPS includes both satellites as well as the inter-SC adapter.